

## **IN THE CLAIMS:**

Please add claims 16-23 and amend claims 1-3, 5-10, 12-15 as follows.

1. (Currently Amended) A system, ~~comprising: for transmitting internal messages in a local network while maintaining message synchronism, comprising:~~

multiple sending computer units (CPU<sub>s</sub>), each for running at least one sending application process for sending an internal message; and

multiple receiving computer units (CPU<sub>r</sub>), each for running at least one receiving application process for receiving a sent internal message, each receiving application process having at least one replicated copy residing in at least one of said multiple receiving computer units, wherein when sending the internal message from a sending application process to an intended receiving application process, said sending application process is arranged to send an identical copy of said internal message to at least one replicated copy of said intended receiving application process;

one interface unit (IF) per one or more computer units for buffering and relaying internal messages sent to and from the corresponding computer units;

multiple external links (S+L), each for linking a computer unit to its corresponding interface unit; and

an internal interconnecting device (I+D) for receiving internal messages relayed by the interface units corresponding to the sending computer units, and for forwarding each received internal message to the interface units corresponding to the respective receiving

computer units one received internal message at a time, said interconnecting device internally coupled with the interface units,

wherein at least one of said interface units, at least one of said external links and said internal interconnecting device are arranged to forward said identical copy of said internal message, sent by said sending application process, to said intended receiving application process and to each replicated copy of said intended receiving application process for receipt in identical order, and

wherein at least one of said interface units, at least one of said external links and said internal interconnecting device are arranged to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.

2. (Currently Amended) The system according to claim 1, wherein ~~characterized in that~~ each interface unit further comprises:

a transmitting buffer (TX) for storing one or more message to be sent until processed by the interconnecting device, and

a receiving buffer (RX) for storing one or more received messages until processed by the corresponding computer unit.

3. (Currently Amended) The system according to claim 1, wherein ~~characterized in that~~ messages are sent as multicasts by the sending application process.

4. (Cancelled)

5. (Currently Amended) The system according to claim 1, wherein  
~~characterized in that~~ the interconnecting device is an internal bus.

6. (Currently Amended) The system according to claim 1, wherein  
~~characterized in that~~ the interconnecting device is a crossbar.

7. (Currently Amended) The system according to claim 1, wherein  
~~characterized in that~~ the interconnecting device and the interface units coupled to it are  
implemented as a modified LAN switch.

8. (Currently Amended) A system, comprising: ~~for transmitting internal  
messages in a local network while maintaining message synchronism, comprising:~~

multiple sending computer units (CPUs), each for running at least one sending  
application process for sending an internal message; ~~and~~

multiple receiving computer units (CPU~~r~~), each for running at least one receiving  
application process for receiving a sent internal message, each receiving application  
process having at least one replicated copy residing in at least one of said multiple  
receiving computer units, wherein when sending the internal message from a sending  
application process to an intended receiving application process, said sending application

process is arranged to send by using group addressing an identical copy of said internal message to at least one replicated copy of said intended receiving application process;

multiple multiplexer units (~~MUX~~), each for collecting internal messages from and distributing internal messages to one or more sending computer units;

one interface unit (~~IF~~) per one or more multiplexer units for buffering and relaying internal messages sent to and from the corresponding multiplexer units; and

an internal interconnecting device (~~IxD~~) for receiving internal messages relayed by the interface units corresponding to the sending computer units, and for forwarding each received internal message to the interface units corresponding to the respective receiving computer units one received internal message at a time, said interconnecting device internally coupled with the interface units,

wherein at least one of said interface units, at least one of said multiplexer units and said internal interconnecting device are arranged to forward said identical copy of said internal message, sent by said sending application process, to said intended receiving application process and to each replicated copy of said intended receiving application process for receipt in identical order, and

wherein at least one of said interface units, at least one of said multiplexer units and said internal interconnecting device are arranged to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.

9. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ each interface unit further comprises:

a transmitting buffer (TX) for storing one or more message to be sent until  
processed by the interconnecting device, and

a receiving buffer (RX) for storing one or more received messages until processed  
by the corresponding multiplexer unit.

10. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ messages are sent as multicasts by the sending application process.

11. (Cancelled)

12. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ the interconnecting device is an internal bus.

13. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ the interconnecting device is a crossbar.

14. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ the interconnecting device, the interface units coupled to it and the  
multiplexer units are implemented as modified LAN switches.

15. (Currently Amended) The system according to claim 8, wherein  
~~characterized in that~~ a multiplexer unit is connected to an interface unit via another  
multiplexer unit.

16. (New) A method, comprising:

sending an internal message from a sending application process of one of multiple  
sending computer units to an intended receiving application process of one of multiple  
receiving computer units, each receiving application process having at least one  
replicated copy residing in at least one of said multiple receiving computer units and said  
sending application process is arranged to send an identical copy of said internal message  
to at least one replicated copy of said intended receiving application process;

arranging at least one of multiple interface units, at least one of multiple external  
links, and an interconnecting device, internally coupled, to forward said identical copy of  
said internal message sent by said sending application process to said intended receiving  
application process and to each replicated copy of said intended receiving application  
process for receipt in identical order, wherein one of said interface units per one or more  
computer units is provided for buffering and relaying internal messages sent to and from  
the corresponding computer units, each of the multiple external links is provided for  
linking a computer unit to its corresponding interface unit, and said internal  
interconnecting device is provided for receiving internal messages relayed by the  
interface units corresponding to the sending computer units and for forwarding each  
received internal message to the interface units corresponding to the respective receiving

computer units one received internal message at a time, said interconnecting device internally coupled with the interface units; and

arranging at least one of said interface units, at least one of said external links and said internal interconnecting device to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.

17. (New) The method according to claim 11, further comprising:

storing one or more message to be sent until processed by the interconnecting device, and

storing one or more received messages until processed by the corresponding computer unit.

18. (New) The method according to claim 11, further comprising sending messages as multicasts by the sending application process.

19. (New) A method, comprising:

sending an internal message from a sending application process of one of multiple sending computer units to an intended receiving application process of one of multiple receiving computer units, each receiving application process having at least one replicated copy residing in at least one of said multiple receiving computer units and said sending application process is arranged to send by using group addressing an identical

copy of said internal message to at least one replicated copy of said intended receiving application process;

arranging at least interface unit, at least one multiplexer unit and an internal interconnecting device to forward said identical copy of said internal message, sent by said sending application process, to said intended receiving application process and to each replicated copy of said intended receiving application process for receipt in identical order, where multiple multiplexer units are provided for collecting internal messages from and distributing internal messages to one or more sending computer units, one interface unit per one or more multiplexer units is provided for buffering and relaying internal messages sent to and from the corresponding multiplexer units, and the internal interconnecting device is provided for receiving internal messages relayed by the interface units corresponding to the sending computer units and for forwarding each received internal message to the interface units corresponding to the respective receiving computer units one received internal message at a time, said interconnecting device internally coupled with the interface units; and

arranging at least one of said interface units, at least one of said multiplexer units and said internal interconnecting device to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.

20. (New) The method according to claim 14, further comprising:



storing one or more message to be sent until processed by the interconnecting device, and

storing one or more received messages until processed by the corresponding multiplexer unit.

21. (New) The method according to claim 14, further comprising sending messages as multicasts by the sending application process.

22. (New) A apparatus, comprising:

sending means for sending an internal message from a sending application process of one of multiple sending computer units to an intended receiving application process of one of multiple receiving computer units, each receiving application process having at least one replicated copy residing in at least one of said multiple receiving computer units and said sending application process is arranged to send an identical copy of said internal message to at least one replicated copy of said intended receiving application process;

arranging means for arranging at least one of multiple interface units, at least one of multiple external links, and an interconnecting device, internally coupled, to forward said identical copy of said internal message sent by said sending application process to said intended receiving application process and to each replicated copy of said intended receiving application process for receipt in identical order, wherein one of said interface units per one or more computer units is provided for buffering and relaying internal messages sent to and from the corresponding computer units, each of the multiple

external links is provided for linking a computer unit to its corresponding interface unit, and said internal interconnecting device is provided for receiving internal messages relayed by the interface units corresponding to the sending computer units and for forwarding each received internal message to the interface units corresponding to the respective receiving computer units one received internal message at a time, said interconnecting device internally coupled with the interface units; and

arranging means for arranging at least one of said interface units, at least one of said external links and said internal interconnecting device to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.

23. (New) An apparatus, comprising:

sending means for sending an internal message from a sending application process of one of multiple sending computer units to an intended receiving application process of one of multiple receiving computer units, each receiving application process having at least one replicated copy residing in at least one of said multiple receiving computer units and said sending application process is arranged to send by using group addressing an identical copy of said internal message to at least one replicated copy of said intended receiving application process;

arranging means for arranging at least interface unit, at least one multiplexer unit and an internal interconnecting device to forward said identical copy of said internal message, sent by said sending application process, to said intended receiving application

process and to each replicated copy of said intended receiving application process for receipt in identical order, where multiple multiplexer units are provided for collecting internal messages from and distributing internal messages to one or more sending computer units, one interface unit per one or more multiplexer units is provided for buffering and relaying internal messages sent to and from the corresponding multiplexer units, and the internal interconnecting device is provided for receiving internal messages relayed by the interface units corresponding to the sending computer units and for forwarding each received internal message to the interface units corresponding to the respective receiving computer units one received internal message at a time, said interconnecting device internally coupled with the interface units; and

arranging means for arranging at least one of said interface units, at least one of said multiplexer units and said internal interconnecting device to route an internal message sent by a sending application process to a receiving application process running in a same computer unit via said interconnecting device.